OPERATING SUMMARY

1972

GALT

Ontario

Ministry of the
Environment

135 St. Clair Avenue West
Toronto 195, Ontario

We are pleased to present you with the 1972 operating summary for the water pollution control plant serving your community.

This summary contains data on the performance of the plant as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, by their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in protecting the environment through the efficient operation of this wastewater treatment facility.

D.S. Caverly,
Assistant Deputy Minister.

D.A. McTavish, P. Eng.,
Director,
Project Operations Branch.

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable James A. C. Auld

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
D. S. Caverly

EXECUTIVE DIRECTOR
K. H. Sharpe

PROJECT OPERATIONS BRANCH

DIRECTOR
D. A. McTavish

ASSISTANT DIRECTOR
C. W. Perry

ACTING REGIONAL SUPERVISOR
B. W. Hansler

OPERATIONS ENGINEER
J. Nurmberg

135 St. Clair Avenue West
Toronto 195

GALT

WATER POLLUTION CONTROL PLANT

operated for

THE CITY OF GALT

by the

MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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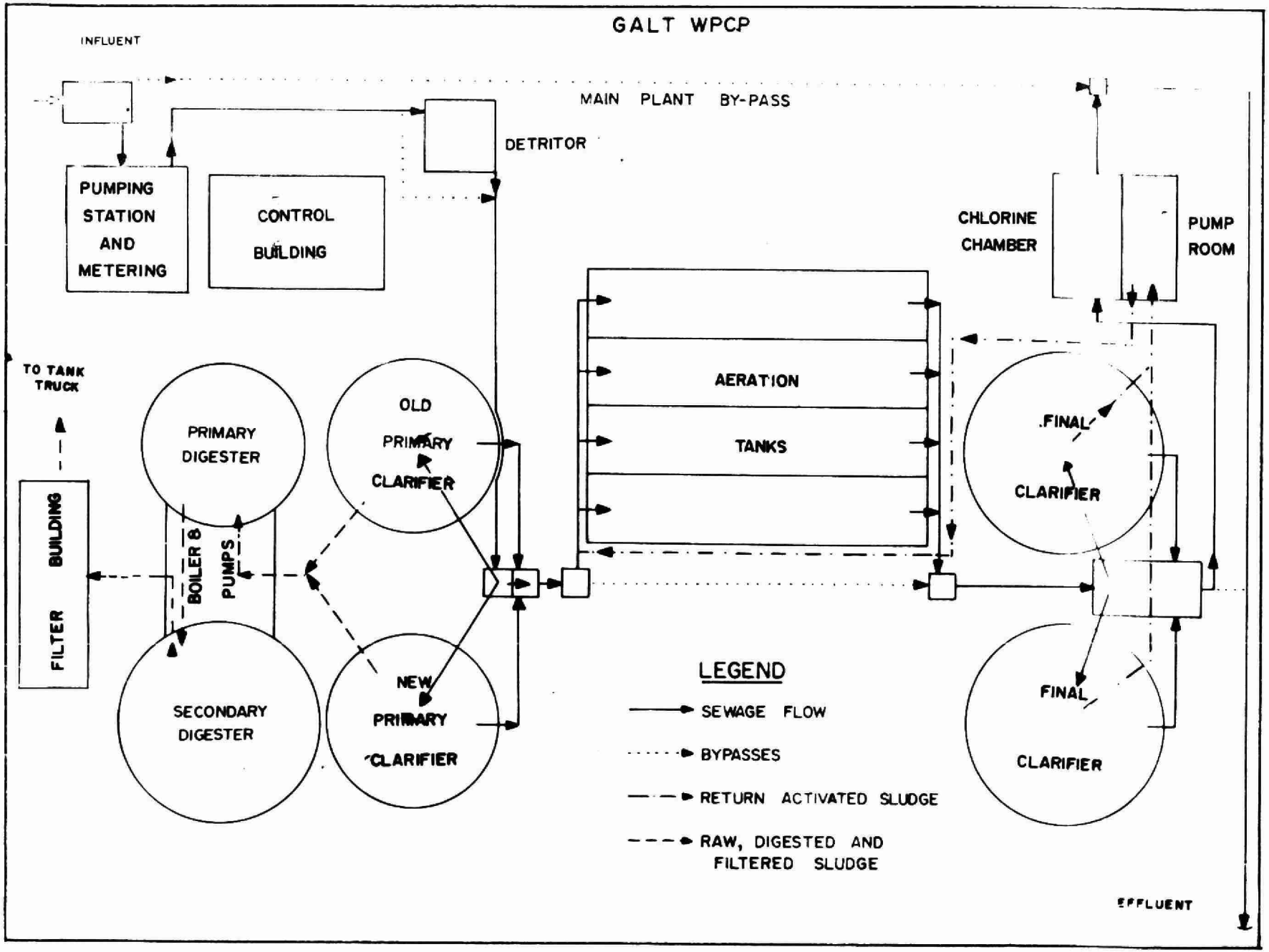

GALT WPCP
INFLUENT
MAIN PLANT BY-PASS
DETRITOR
PUMPING STATION AND METERING
CONTROL BUILDING
CHLORINE CHAMBER
PUMP ROOM
AERATION TANKS
TO TANK TRUCK
PRIMARY DIGESTER
OLD PRIMARY CLARIFIER
FINAL CLARIFIER
FILTER BUILDING
BOILER & PUMPS
SECONDARY DIGESTER
NEW PRIMARY CLARIFIER
FINAL CLARIFIER
LEGEND
SEWAGE FLOW
BYPASSES
RETURN ACTIVATED SLUDGE
RAW, DIGESTED AND FILTERED SLUDGE
EFFLUENT

DESIGN DATA

PROJECT NO.	1-0099-67
TREATMENT	Activated Sludge
DESIGN FLOW	5.0 mgd
DESIGN POPULATION	34,000
BOD - Raw Sewage	250 mg/l
- Removal	90%
SS - Raw Sewage	250 mg/l
- Removal	90%

PRIMARY TREATMENT

Comminution

Type: C.P. Barminutor
Size: One Model C (36")

Raw Sewage Pumps

Type: Babcock-Wilcox
Size: Three 3500 gpm @ 30' tdh

Grit Removal

Type: Eimco Detritor
Size: One 18' x 18' x 2' deep
(4,000 gal)
Retention: 1.15 min

Primary Sedimentation

Type: (a) Dorr (old cl.)
(b) Eimco (new cl.)
Size: Two 60' dia x 9' swd
50,600 cu ft or 315,000 gal)
Retention: 1.5 hours
Loading: Surface, 884 gal/ft^2/day
Weir, 13,250 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Mechanical aeration
Single pass (5-cell)
Size: Four 150' x 30' x 13.7'
(234,000 cu ft or 1.46 mil gal)
Retention: 7.0 hours

Aerators

- Twenty Ames-Crosta

Secondary Sedimentation

Type: Eimco
Size: Two 75' dia x 10' swd
(88,400 cu ft or 550,000 gal)
Retention: 2.64 hours
Loading: Surface, 566 gal/ft^2/day
Weir, 10,600 gal/ft/day

CHLORINATION

- One F & P Automatic

Chlorine Contact Chamber

Size: One 49.25' x 21.5' x 7.25'
(46,000 gal)
Retention: 13.25 min

OUTFALL

- to Grand River

SLUDGE HANDLING

Digestion System

Type: Two-stage

Primary --
Type: Eimco draft tube mixers (2) on concrete roof
Size: One 50' dia x 20' swd (30,300 cu ft or 189,000 gal)

Secondary --
Size: One 70' dia x 20' swd (77,000 cu ft or 480,000 gal)

Vacuum Filter

Type: Eimco (cloth)
Size: One, 380 sq ft

'72 Review

GENERAL

The Galt Water Pollution Control Plant is a conventional activated sludge project with a design flow of 8.5 million gallons per day. Sewage entering the plant receives primary clarification, secondary biological treatment and the final effluent is disinfected by chlorine prior to being discharged to the Grand River. Sludge removed from the sewage is stabilized by digestion prior to disposal on farm lands. Construction of the plant expansion from 5.0 million gallons per day to 8.50 million gallons per day was substantially completed in December, 1972.

The plant is staffed by seven men which include one superintendent, one laboratory technician, one maintenance technician and four operators.

Under the supervision of head office engineers, the plant staff operated a clean, attractive and efficient plant for the City of Galt.

EXPENDITURES

In 1972 a total of 1739.2 million gallons was treated at an operating cost of $124, 873.96 . Cost per million gallons treated was $60.29 and the cost per pound of BOD removed was 4.2 cents.

PLANT FLOWS AND CHLORINATION

The average daily flow was 4.8 million gallons, 9 percent greater than the 1971 flow of 4.4 mgd. The average daily flow was 4 percent less than the design flow of 5.0 million gallons per day. The design flow was exceeded 40 percent of the time during the year.

An average chlorine dosage of 4.1 mg/l was required to maintain an average chlorine residual of 0.5 mg/l in the final effluent.

PLANT EFFICIENCY

The average BOD of the raw sewage and final effluent were 192 mg/l and 20 mg/l respectively. The plant removed an average of 90 percent of the BOD compared to 89 percent in 1971. The Ministry of the Environment effluent BOD objective of 15 mg/l was exceeded 80 percent of the time.

The suspended solids in the raw sewage and final effluent averaged 131 mg/l and 33 mg/l respectively. The plant removed an average of 75 percent of the suspended solids compared to 89 percent in 1971. The Ministry of the Environment final effluent suspended solids objective of 15 mg/l was exceeded 75 percent of the time.

SLUDGE DIGESTION AND DISPOSAL

A total of 4.42 million gallons of raw sludge was pumped to the digester system during the year. The raw sludge averaged 5.2 percent total solids, of which 76 percent was volatile matter.

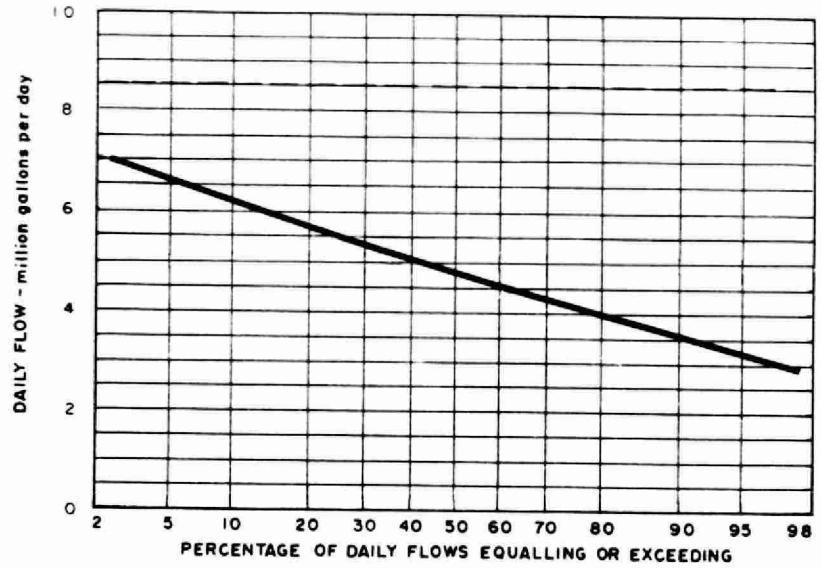
Digested sludge from the secondary digesters averaged 3.4 percent total solids, of which 64 percent was volatile matter. The average reduction in volatile matter was 44 percent.

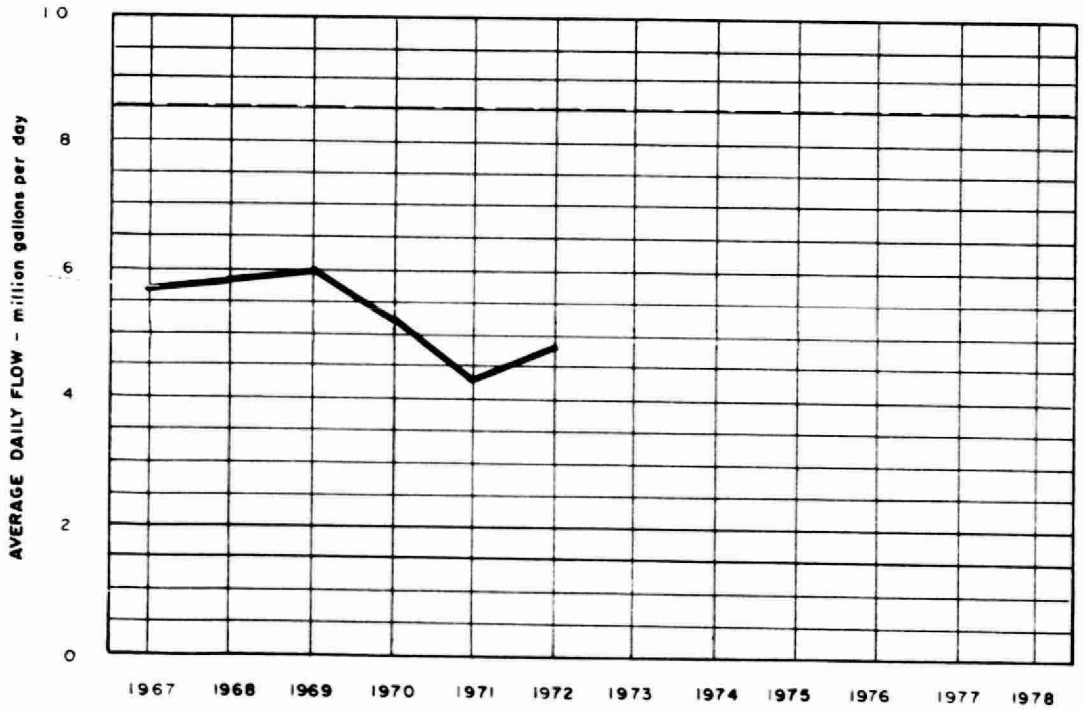
CONCLUSIONS

The plant produced an acceptable effluent comparable to Ministry of the Environment objectives in 1972, in spite of the operating difficulties due to the expansion.

PROCESS DATA

FLOWS



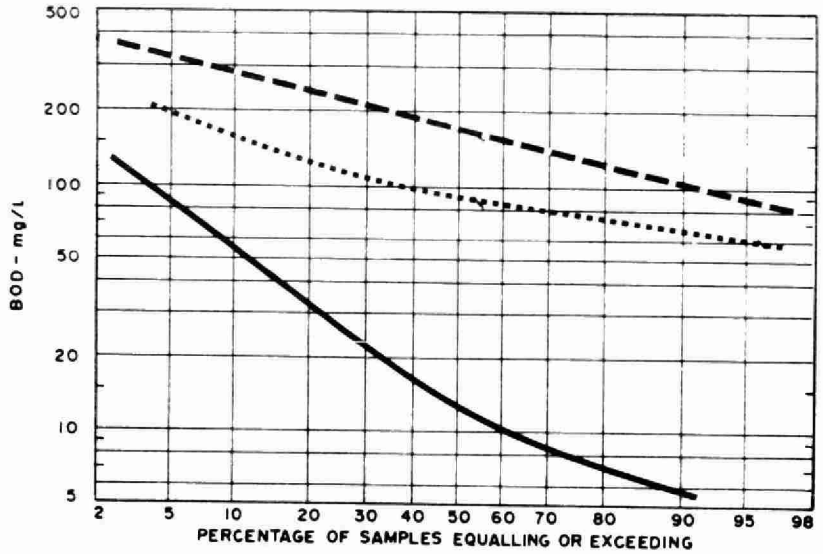


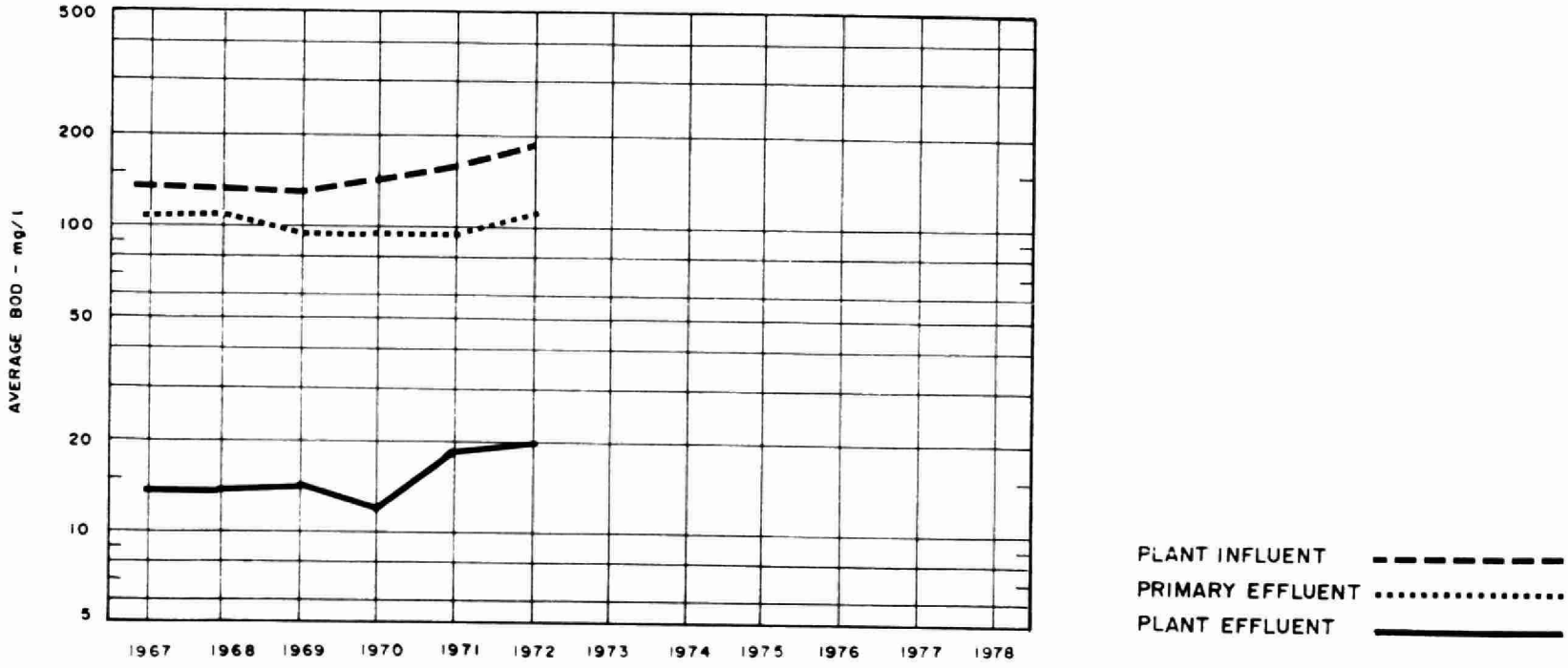
DESIGN CAPACITY _ _ _ _ _ _ _

PLANT PERFORMANCE

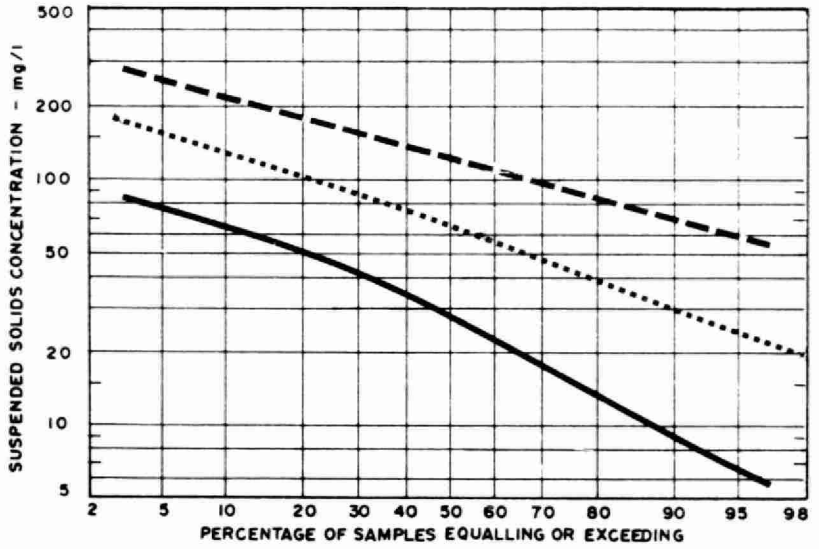
MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	136.6	4.4	5.4	113	10	91	140	115	16	86	140	6.6	4.5
FEB	121.9	4.2	4.8	139	8	94	160	138	11	92	150	6.7	4.9
MAR	152.4	4.9	6.9	184	5	97	270	112	11	90	150	6.0	3.9
APR	169.5	5.6	8.6	209	16	92	330	145	26	82	200	7.0	4.7
MAY	144.9	4.7	5.8	167	15	91	220	149	13	91	200	9.6	4.9
JUNE	127.5	4.3	5.1	198	6	97	240	164	18	89	190	11.	4.9
JULY	128.7	4.2	5.1	160	10	94	190	154	41	73	150	9.0	5.1
AUG	159.7	5.2	9.1	228	40	82	300	119	53	55	100	8.5	6.7
SEPT	148.1	4.9	6.9					78	41	47	55		
OCT	148.8	4.8	6.2	302	55	82	370	135	54	60	120	11.	5.5
NOV	136.9	4.6	6.2	151	42	72	150	135	59	56	100	8.0	6.0
DEC	164.2	5.3	10.8	229	14	94	350	112	37	67	120	9.7	5.8
TOTAL	1739.2	-	-	-	-	-		-	-	-	1675	-	-
AVG.		4.8	MAXIMUM 10.8	192	20	90	247	131	33	75	140	8.5	5.3
No. of Samples	-	-	-	57	58	-	-	184	208	-	-	19	19

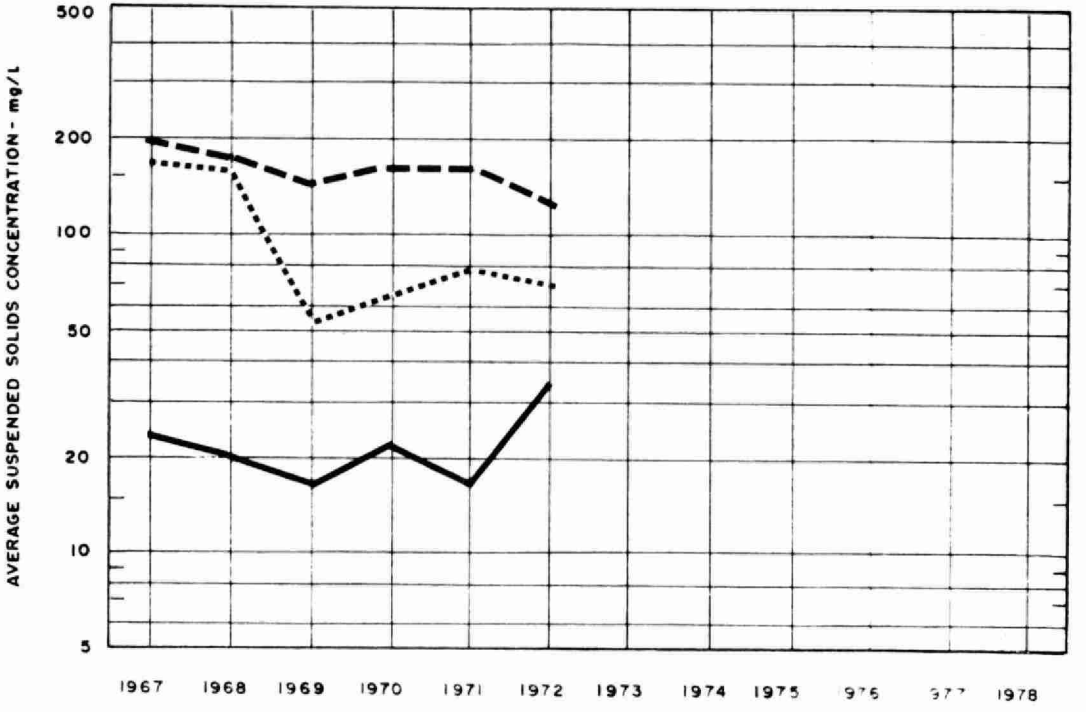
BIOCHEMICAL OXYGEN DEMAND





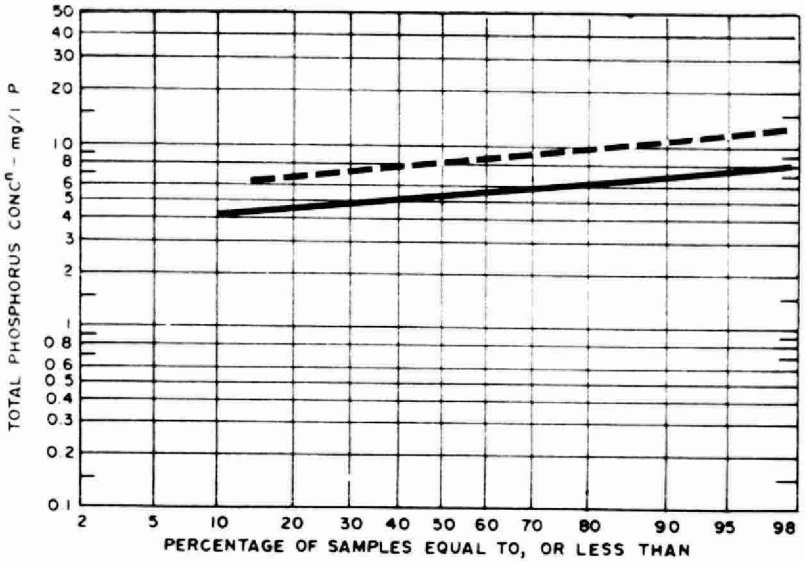
SUSPENDED SOLIDS

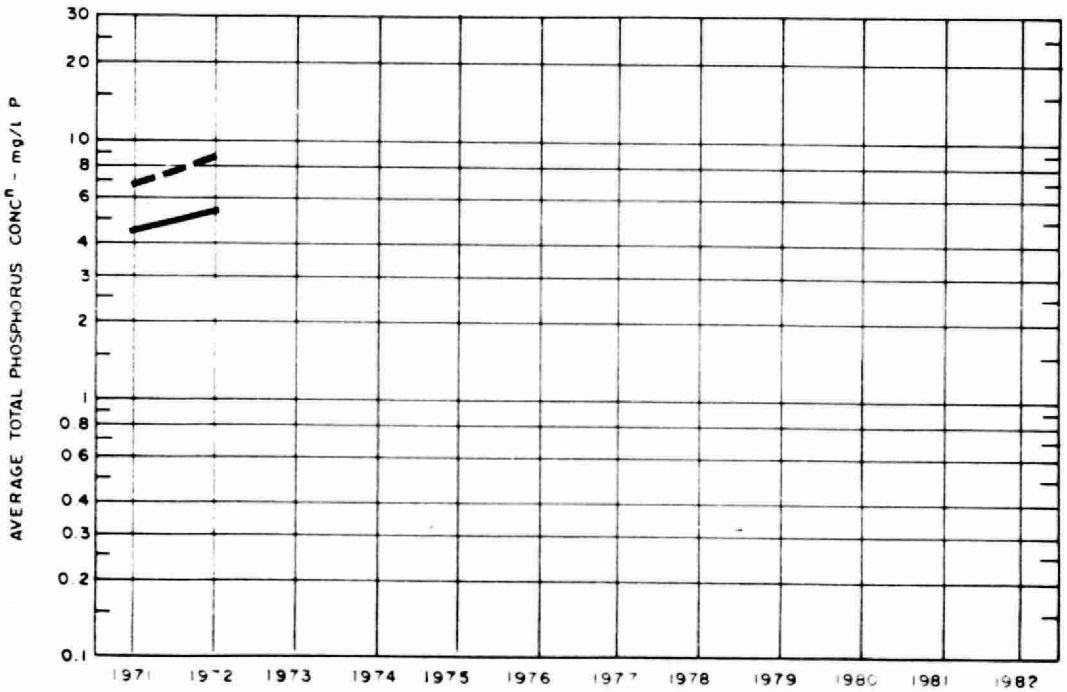




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

PHOSPHORUS

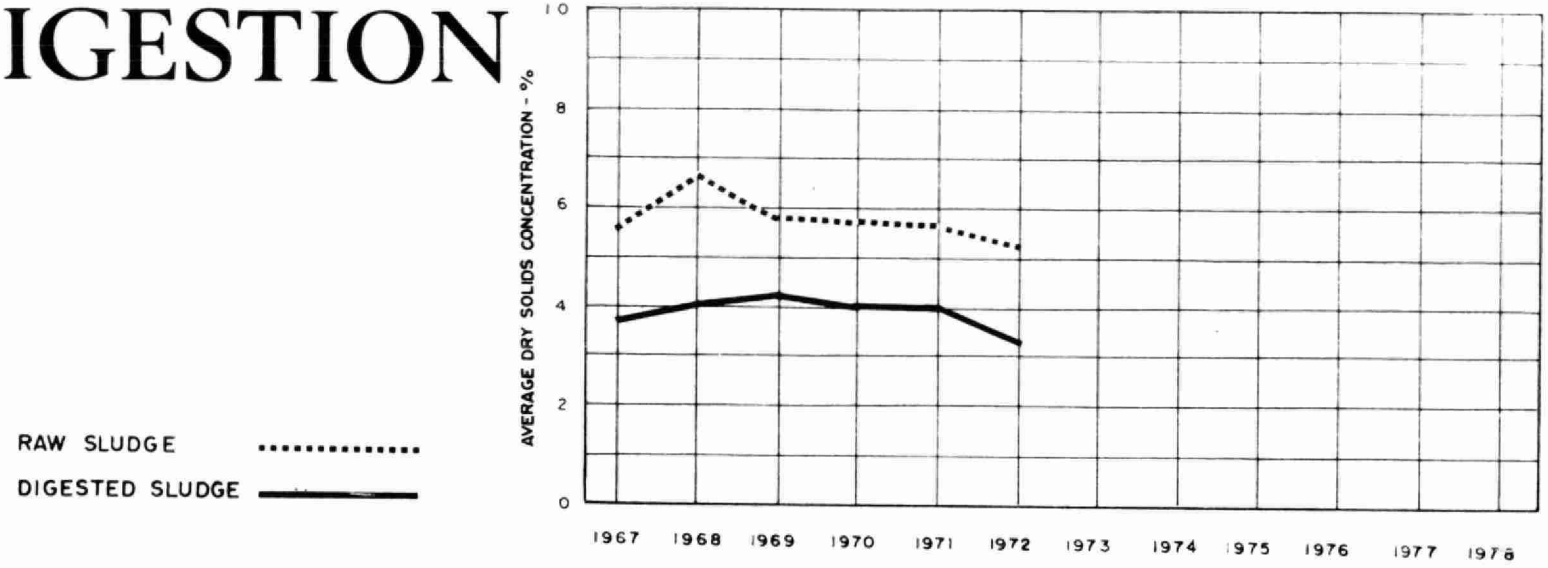


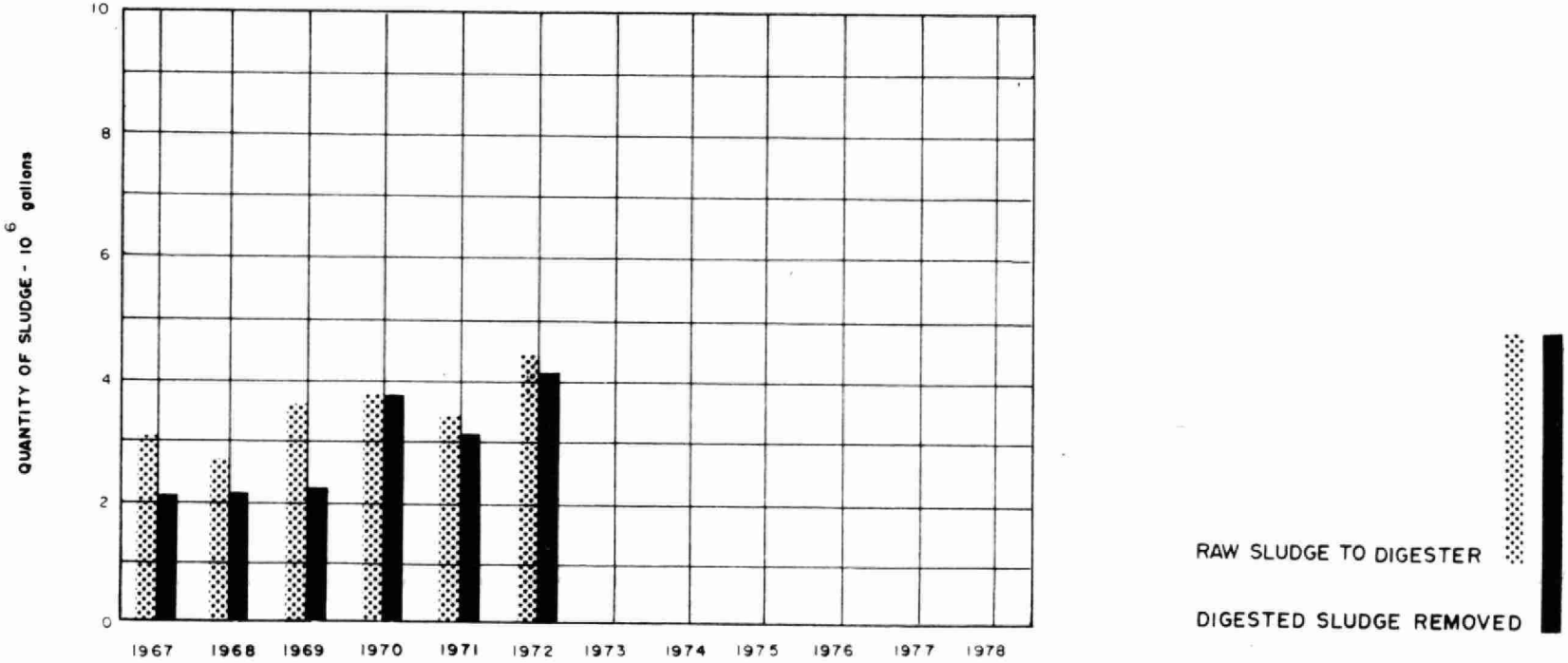


PLANT INFLUENT ------

PLANT EFFLUENT ——

DIGESTION


AVERAGE DRY SOLIDS CONCENTRATION - %
0
2
4
6
8
10
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE
DIGESTED SLUDGE


QUANTITY OF SLUDGE - 10^6 gallons
0
2
4
6
8
10
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED 10^3 pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN	24	4.7	3.4	96	89	2070	.13		380	4.3		440	3.0			2590
FEB	18	3.8	3.1	99	87	1760	.15		400	4.6	78	420	2.6	62		2506
MAR	67	4.2	2.8	91	71	1830	.16		430	4.2	77	540	2.7	64		3234
APR	74	4.3	2.6	85	72	1660	.19		380	4.5	71	320	3.2	62		1900
MAY		4.9	3.4	77	68	1790	.13		410	5.6	73	380	3.3	59		2226
JUNE		4.6	3.6	91	65	1806	1.4		400			360				2114
JULY		4.5	3.5		168	3170			300	3.5	69	340	3.6	59		1993
AUG		5.2	3.2	124	60	2510	.33		410	6.2		420	3.0			2487
SEPT		8.8	6.0		36	1930			360			400				2366
OCT		9.2	6.2	177	46	2780	.37		320	5.1	77	240	1.6	69		1432
NOV		8.1	5.9	112	83	2580	.13		330			50				322
DEC		8.6	5.2	135	59	2640	.18		300	8.6	88	230	7.3	72		1344
TOTAL	183	70.9	–	–	–	–	–	–	4420	–	–	4140	–	–	–	24514
AVG.	0.1 cu. ft/mil gal	5.9	4.1	108	70	2210	.19		368	5.2	76	345	3.4	64		2043